27 June, 2001

MODIS sensor Working Group (MsWG) Summary

Attendance: Bill Barnes, Bruce Guenther, Chris Moeller, Eric Vermote, Gary Toller, Jack Xiong, Jim Young, Roger Drake, Stuart Biggar, Vince Salomonson, Wayne Esaias, Zhengming Wan, Gwyn Fireman, Vincent Chiang, Junqiang Sun

Scheduled Items

TEB B21 and B24 Striping Reduction Progress

Jack presented plots showing the current state of crosstalk correction testing on Bands 21 and 24. The crosstalk correction algorithm has been designed to function properly when the sending band saturates, as well as under other unusual conditions.

Band 21:

- SRCA tests indicate significant crosstalk from Band 20 Det 1 (product order)
- Crosstalk correction causes significant reduction in Band 21 Det 1 striping.

Band 24:

- Incomplete improvement is seen with crosstalk correction, possibly due to
- The a0 term cannot be determined on orbit, as Band 24 Ltyp (240K) is outside the operating range of the OBC blackbody.
- Crosstalk correction was applied for only one channel.
- Sending Band 26 is itself affected by crosstalk.
- Images are shown with autoscaled color table. The granule displayed shows variations in all bands in both scan and track directions; "blobs" are not a crosstalk artifact.
- Same correction strategy will be used with other MWIR bands.
- Moeller uses Band 24 in characterizing atmospheric profile; few others in the MsWG use Band 24.

SWIR Bands:

Code changes are in progress. Correction is expected to reduce obvious striping. Not all crosstalk will be eliminated since subframe differences and channel-to-channel crosstalk affect SWIR bands.

MODIS Anomaly Recovery Related Issues

Roger Drake reported the results of a telecon he participated in just prior to the MsWG meeting:

1. Power Supply 2 shut down in the anomaly; it is not known if PS2 is functional.
2. Survival mode has left the MODIS instrument cold; Telemetry and Command Processor A (TCP-A) is expected to reset if brought up at low temperature.

3. A MODIS recovery plan is in place, and will likely be attempted Thursday afternoon. The instrument will operate with Power Supply 1 (PS1) and Telemetry and Command Processor B (TCP-B), brought up in the following sequence:

- Schedule a TDRSS contact of about an hour.
- Enable Power Supply 1 (TCP B is already enabled)
- Turn on instrument power
- Macro 0 will automatically run and will turn off all loads to the power supply, putting MODIS into a low-power state.
- Telemetry will be collected and reviewed.
- The instrument will be powered down before the end of the TDRSS pass.
- All collected telemetry will be reviewed in detail after the contact.
- If tlm indicates no problems, come up in low-power mode the next day.
- If tlm still indicates no problems, come up in B-side science mode within the next few days.

· We do not yet know the PS2 failure mode, so we cannot do any risk assessment. Full understanding will require lengthy offline testing by SBRS. There are no plans to test PS2 on orbit.

· The Nadir Aperture and Space View doors are open, and the mirror is not rotating. MCST cannot predict whether m1 trending for one-year consistent processing will be affected.

· The anomaly took place at the edge of the South Atlantic Anomaly. Experts in radiation damage indicate that the failure is consistent with a high-energy particle striking circuitry.

Around the Table

MCST:

A walkthrough of crosstalk code changes has been held. There were no objections, so we will proceed with coding and testing. Results are expected in about a week.

Barnes:

Even if MODIS functions correctly in low power mode, some time will be needed to discuss how to reinstate normal operations. Science data will likely not be collected for another week.

Vermote:

Q: Any news on FM1 Band 1 and 2 instability?
A: Correspondence is seen between gain variations and FPA temperature; Bands 1 and 2 have highest temperature sensitivity of all bands. The highest shifts are seen when the instrument was at ambient and on for only a few hours. SBRS Detector Division will continue with analysis.

Moeller:

Will be curious to see the results of SRCA-derived crosstalk correction in reflective bands. Tested Band 24 crosstalk correction; removed coastline but cooler land features persist in the North. Test method still averages signal from all sending detectors; a detector by detector correction might provide further improvement.

compiled by G. Fireman 29 June, 2001